STATE OF MAINE
DEPARTMENT OF CONSERVATION
MAINE FOREST SERVICE
Insect And Disease Laboratory
168 State House Station~50 Hospital Street
AUGUSTA, MAINE
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http://www.maine.gov/doc/mfs/idmhome.htm

Forest & Shade Tree - Insect & Disease Conditions for Maine

April 15, 2011

Welcome to the 2011 growing season, and to this series of the *Insect and Disease Conditions* reports! As we all know, to date we've had a relatively cool spring. This may have slowed the development of some insects and diseases, but it has also provided ideal weather conditions for maple sap and syrup production.

The plentiful winter snows have provided great soil moisture conditions for the start of the 2011 growing season. However, there has been more winter injury and salt damage to roadside trees than there was last year, from the more frequent application of de-icing salts. Most of the conifer needle browning evident along streets and highways is the result of salt spray. Perhaps the most urgent pest problem is the occurrence of increased populations of browntail moths in the mid-coast region. Details of both of these conditions are described below.

We are planning for another very busy year, and with fewer personnel than last year. We have a full agenda of pest surveys, potential quarantine regulation changes, several applied research studies, and of course the insect and disease diagnosis clinic. As always, we welcome your comments and suggestion on this newsletter, and encourage you to stay vigilant and to submit samples of particular interest or concern to you. We appreciate your continued interest in and support of forest and tree health, and we will make every effort to service your requests as quickly as possible.

Laboratory Hours

Our business hours for 2011 will be 7:30 a.m. to 4:00 p.m. Monday through Friday, except for holidays. However, due to a very busy field schedule, we may not be able to staff the Insect and Disease Lab at all times. So if you call and receive no answer, please call back another time. And if you plan to visit the Lab, you may wish to call ahead just to make sure someone will be present to meet with you. The office will be closed on all State Government shut down days: April 19th, and May 27th.

If you have questions on insect and disease pests of trees, you can now submit a clinic form directly on-line. We will also accept samples mailed in to our Lab in Augusta. Our street address and location remains the same (50 Hospital Street, Augusta), our mailing address is **168 State House Station, Augusta, 04333-0168**. Lastly, we have attached the following items to this report for your use:

* Advice and Technical Assistance Sheet.
* Insect & Disease Diagnostic and Report Form.

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Early Season Guide to Pest Management

The following table should assist you in the early season planning process. **Remember that this is just a guide** and that conditions will vary. Many pests may be managed with several other suitable products not listed here, but registered for use in Maine. This chart reflects those products that should be readily available and effective, *but not to the exclusion of others that may be suitable.* Information on any entry preceded by an * may be available on our website or can be requested by calling or writing to the Insect and Disease Laboratory, 168 State House Station, Augusta, Maine 04333-0168, Phone (207) 287-2431, Fax (207) 287-2432.

Insect or Disease	Cultural Controls	Chemical Controls
Apple Scab	Remove any fallen leaves not raked last autumn; plant resistant crabapples such as 'Adams', 'Baskatong', 'Beverly', 'Bob White', 'David', 'Dolgo', 'Donald Wyman', 'Liset', 'Red Jewel' and 'Sugartyme'. Other varieties of apple that are resistant to scab include Liberty, Pristine, Jonafree, Freedom, Redfree, Crimson, Enterprise, and William's Pride.	Propiconazole (Banner), Thiophanate methyl (T-Methyl), Chlorothalonil (Daconil), or Mancozeb (Dithane, Fore, Ziram) from bud break every ten days during wet weather. Captan, Manzate, and Polyram are also effective.
Ash Anthracnose	Before budbreak, remove any fallen leaves not raked last autumn. Compost the leaves well away from ash trees.	Propiconazole (Banner), Chlorothalonil (Bravo, Daconil, Mainsail WDG) at budbreak, and again 10 to 14 days later.
Ash Leaf Rust	None which are practical and effective.	Mancozeb, chlorothalonil (Daconil), or Thiophanate methyl (T-Methyl), applied at budbreak and repeated 2 to 3 times at 10-day intervals.
*Balsam Gall Midge		Diazinon or chlorpyrifos (Lorsban**) late May to early June.
*Balsam Shootboring Sawfly		Chlorpyrifos (Lorsban 4E**) or Diazinon AG500 3 times at 5 day intervals during the 2 weeks following the observation of activity of adults (mid-late April) or in the two weeks prior to normal balsam twig aphid spray dates.
*Balsam Twig Aphid		Diazinon** or chlorpyrifos (Lorsban**) at bud break.
*Birch Casebearer		Malathion or carbaryl (Sevin) applied after most or all of the cases have moved to opening buds.
Black Knot of Peach, Plum, and Cherry	Prune and destroy knotted twigs and branches.	Thiophanate methyl (T-Methyl or Fungo Flo) or chlorothalonil (Daconil) when trees are dormant and twice again at three week intervals after budbreak.
*Browntail Moth	Clipping of overwintering webs is only effective prior to the time larvae beginning actively feeding on emerging foliage (April).	The use of pesticides is a complex issue requiring professional assistance and there are restrictions on treating near water. Call for more information.
*Bruce Spanworm		Emerges early as buds begin to swell on northern hardwoods, especially beech. Larvae bore into buds. Controls not usually recommended.
Cyclaneusma Needle Cast of Scotch Pine	Use disease free planting stock; remove non crop Scotch pines from area.	Chlorothalonil (Bravo or Daconil) prior to bud break and immediately after wet periods throughout the growing season.
Diplodia Tip Blight	*see* Sphaeropsis Shoot Blight	*see* Sphaeropsis Shoot Blight
Dogwood Anthracnose	Remove any fallen leaves not raked last autumn; fertilize trees; prune out dead twigs and suckers; plant Chinese or Japanese dogwood instead of native flowering dogwood.	Chlorothalonil (Daconil), Thiophanate methyl (T-Methyl, Fungo Flo), Propiconazole (Banner), or Mancozeb (Dithane, Fore) at bud break and again three times at three week intervals.
Dothistroma Needle Blight		Copper sulfate (Kocide) or Thiophanate methyl (T-Methyl)
Dutch Elm Disease	Plant disease resistant elms; eliminate all potential beetle breeding elm material within 700 feet of trees to be protected.	Onyx (bifenthrin) or chlorpyrifos (Lorsban**) for beetle vector control on the lower 9' of trunk.

Insect or Disease	Cultural Controls	Chemical Controls
*Eastern Tent Caterpillar	Prune out egg masses on twigs prior to hatch; remove and destroy small tents as they develop (late April-early May)	Acephate (Orthene), carbaryl (Sevin), cyfluthrin or *Bt* on warm days when larvae leave tents to feed.
*Fall Cankerworm		Acephate (Orthene), *Bt*, carbaryl (Sevin), cyfluthrin (Tempo) applied while larvae are small (late May-early June on boxelder in Aroostook County). Early to mid May on elm and oak in southern Maine.
*Gypsy Moth	Scrape egg clusters from tree boles and larger branches into a container and destroy them. Complete before egg hatch (late April).	Acephate (Orthene), *Bt*, carbaryl (Sevin), cyfluthrin (Tempo), or diflubenzuron (Dimilin**) when larvae are actively feeding (early June).
Hawthorn Leaf Spot Mt. Ash Leaf Spot	Remove any fallen leaves not raked last autumn; plant resistant varieties such as *Crataegus crus-galli*.	Thiophanate methyl (T-Methyl or Fungo Flo), Chlorothalonil (Daconil), or Mancozeb (Dithane, Fore) as leaves unfold and at two week intervals until dry weather.
*Hemlock Woolly Adelgid	Watch for signs of infestation and report immediately.	Call for information.
Heterobasidion irregulare (= H. annosum; Fomes annosus) Red Pine Root Rot	Restrict thinning operations to between December and February, when spore dispersal is minimal.	Disodium octaborate tetrahydrate (Cellu-Treat) applied to freshly cut stumps (within three days of tree felling).
Horse Chestnut Leaf Blotch	Remove any fallen leaves not raked last autumn.	Thiophanate methyl (Fungo Flo) or chlorothalonil (Daconil) at bud break and twice more at 14 day intervals.
*Larch Casebearer		Carbaryl (Sevin) or cyfluthrin (Tempo) applied after most cases have moved to the expanding needle clusters (late April to early May).
Maple Anthracnose	Before budbreak, remove any fallen leaves not raked last autumn. Compost the leaves well away from maples.	Thiophanate methyl (Fungo Flo) at bud break and twice again at 10-14 day intervals.
Peach Leaf Curl		Chlorothalonil (Bravo) or Ferbam (Carbamate) or Ziram applied as full coverage spray when trees are dormant.
*Pear Thrips		Controls and timing not well understood. Thrips are active on expanding maple.
Pine-Pine Gall Rust of Jack and Scotch Pine	Prune rust galls from lightly infected trees; rogue heavily infected trees from plantations before May 1. Use disease free planting stock.	None at this time.
Rhabdocline Needle Cast and Swiss Needle Cast of Douglas-Fir	Rogue severely infected trees from plantations before May 1.	None at this time.
*Satin Moth		Treat infested poplars and willow in mid to late May with *Bt*, carbaryl (Sevin) or cyfluthrin (Tempo).
Sirococcus Shoot Blight of Spruces	Prune out affected twig tips by mid-summer, and destroy.	Chlorothalonil (Daconil, Bravo), at bud break and again 10 to 14 days later. The second application should be applied sooner if wet weather conditions prevail.
Sphaeropsis Shoot Blight of Red, Scotch, and Austrian Pines	Use disease free planting stock; remove non-crop-tree hard pines from area. Prune and burn lower, heavily infected and dead branches.	Chlorothalonil (Bravo), copper sulfate (Kocide), or Thiophanate methyl (T-Methyl, Topsin) at bud break and again when shoots are half grown.
*Spruce Gall Adelgids	Prune off and destroy new developing galls in mid to late June.	Treat infested trees just prior to bud break with dormant oil, carbaryl (Sevin) chlorpyrifos (Lorsban**) or imidacloprid (Merit). Controls can also be applied in the fall.
Spruce Needlecast of White and Colorado Blue Spruce (Rhizosphaera kalkhoffii)	Prune, remove, and destroy the most heavily infected, lower branches on larger trees.	Chlorothalonil (Bravo, Daconil), or copper sulfate (Bordeaux mix) as buds break and again 10 days to two weeks later.
*Ticks	Watch for ticks throughout the field season (April-November). Avoid high risk areas if possible, inspect yourself daily and remove ticks and use repellents as directed.	Compounds containing DEET can be used as repellents. Those containing the toxicant permethrin can be used on clothing as directed.

Insect or Disease	Cultural Controls	Chemical Controls
*Viburnum Leaf Beetle	Where possible, prune off any twigs with scabby, egg-filled holes prior to May 1st.	Watch in mid - late May) for developing larvae and treat with acephate (Orthene), carbaryl (Sevin), or chlorpyrifos (Lorsban**) or imidacloprid (Merit).
*White Pine Blister Rust	Prune cankered lateral branches from trees and excise stem cankers by removing bark at least four inches above and below and two inches either side of discolored bark. Remove (uproot or apply herbicide) Ribes from within 1000 feet of white pine forests or plantations. Surveying for Ribes plants is most effective from mid- April through early May.	Herbicides for controlling native Ribes include Glypho 41, Accord XRT II, Roundup Pro, Roundup 2K, and Roundup Original II.
*White Pine Weevil	Refrain from planting white pine or spruce for reforestation in open areas, on heavy clay soils, or on heavily sodded fields. Correctively prune damaged trees to establish new leaders.	Apply control in the spring once there have been several days above 60 degrees Fahrenheit. Use Pyrenone Crop Spray, Astro, Onyx, Talstar or Dibrom 8 at 14-20 day intervals until June. Commercial Forest and Christmas Tree Plantations: diflubenzuron (Dimilin**) or chlorpyrifos (Lorsban**).

***NOTE**: These recommendations are not a substitute for pesticide labeling. Read the label before applying any pesticide. Pesticide recommendations are contingent on continued EPA and Maine Board of Pesticides Control registration and are subject to change.

Caution: For your own protection and that of the environment, apply the pesticide only in strict accordance with label directions and precautions.

**Restricted-use pesticide may be purchased and used only by certified applicators.

Quarantines

Maine has five forestry-related state quarantines: (1) *Ribes* spp. (currants and gooseberries) because they are alternate hosts for white pine blister rust, (2) gypsy moth, (3) European larch canker, (4) hemlock woolly adelgid and (5) pine shoot beetle. The quarantine on *Ribes* prohibits planting, possessing or propagating currant or gooseberry plants in some parts of the State and prohibits the species European black currant, *Ribes nigrum*, and its cultivars throughout the State. The four other forestry-related quarantines restrict the movement of forest products that have the potential to spread specific tree pests or diseases. Regulated material may move freely within their respective quarantine zones, but must go to facilities with compliance agreements and may require inspection if they are moved outside of the quarantine zone. The compliance agreements require certain practices of the receivers to help reduce the risk of spread of the target insect or disease organism.

If you have any questions regarding forestry-related quarantines or moving or receiving regulated material, please contact Allison Kanoti at the Maine Forest Service, allison.m.kanoti@maine.gov or (207) 287-3147. Maps and lists of quarantined towns and information about all the forestry-related quarantines in Maine can be found at our website: maineforestservice.gov/idmquar.htm. Thank you for your continued cooperation in keeping these forest pests and diseases contained.

Insects

***Balsam Gall Midge** (*Paradiplosis tumifex)* - Balsam gall midge populations were high in places in 2010, particularly downeast. Christmas tree growers should be checking their plantations this spring for the midges. The balsam gall midge larvae feed on the new foliage and cause the needle to deform and form a gall around the growing larvae. After the larvae finishes feeding and drops to the ground at the end of summer, the damaged needles also fall off. Populations can get high enough so that the tips of branches are denuded. This makes Christmas trees and wreath brush unmarketable for a few years until the foliage fills in.

In mid to late May watch for small orange midges, they are often easiest to see in the early evening when the breezes die down. Treatment is applied approximately two weeks after adults have been seen in large number (late May to early June) as the new needles flare and begin to flatten. Watch tree development, it may be early this year.

***Balsam Shootboring Sawfly** (*Pleroneura brunneicornis)* – These sawflies tend to more abundant in even numbered years so they may not be too bad this year. Adults are active at the end of April flying around the fir trees. The females lay eggs on the buds and larvae feed before the buds expand. The resulting damage appears as a little "button" of foliage with a hollow stem – in May you can sometimes find the larvae still in the shoot. This sawfly damage can be mistaken for frost damage. Damage from light infestations can be pruned off.

***Balsam Twig Aphid** *(Mindarus abietinus)* – Balsam twig aphids appear early in the spring and suck the juices from the tender new foliage of fir trees. This feeding causes twisting and distortion of the foliage. It does not harm the tree but makes it less attractive for Christmas tree sale. Twig aphid tends to be a perennial problem for Christmas tree growers. Check for aphids in May before budbreak; if trees were damaged last year they may need to be treated this year as the population builds up from year to year.

***Browntail Moth** (*Euproctis chrysorrhoea*) – The browntail moth winter survey has been completed for 2011. Numbers are very high again at the southern end of Merrymeeting Bay in the towns of Bath, Bruswick, West Bath, Topsham and Bowdoinham. Webs in individual trees or a few trees were found from Portland to Freeport and in Augusta, Lewiston and Turner. Also Vaughn Island off Cape Porpoise in Kennebunkport has excessively high numbers of webs. Larvae survived the winter with no ill effects and the webs are large and healthy.

Browntail moth larvae feed on the emerging foliage of oak, apple, birch, cherry, hawthorn, rose and other hardwoods. They emerge from their overwintering webs starting the end of April, even before the buds have broken. They continue to feed on leaves and molt their hairy skins through June when they pupate leaving their last hairy skin behind. Besides defoliating trees and causing branch dieback and tree mortality, all those hairs make many people itch.

Pruning out webs and destroying them (drop them in soapy water) may eliminate the problem if all the webs are within reach. Clipping should be completed by the end of April and insecticide applications (if warranted) should be made during the month of May by a registered pesticide

applicator. There are specific regulations for controlling browntail moth near coastal waters. Be sure to check on the current Board of Pesticide Control regulations before treatment.

***Eastern Tent Caterpillar** (*Malacosoma americanum*) –Look for tiny webs at the crotches of crabapple and cherry tree branches. Remove webs in the evening or early morning when the caterpillars are in the web. Use a wet soapy rag and pull the web out of tree and drop in a bucket of soapy water. (No need for flames or kerosene.) Although the tents are unsightly, these insects rarely harm the trees.

Elongate Hemlock Scale (*Fiorinia externa*) – The first detection of natural spread of elongate hemlock scale in Maine occurred in November 2010 on Gerrish Island in Kittery. This insect is extremely cryptic, and it would not be surprising to find that, like hemlock woolly adelgid, it is established along the south coast. A crew was sampling for hemlock woolly adelgid predator beetles in the mid-canopy of the forest when the scale was detected. Populations were moderate, but easily detectable in mid-canopy samples, they were not obvious on lower branches. Elongate hemlock scale affects many conifer genera. It is most likely to be detectable on hemlock and fir, and most likely to be found on trees planted before 2001 or in native stands already infested by hemlock woolly adelgid. Forest health specialists in Massachusetts and Connecticut report that this insect pest is killing forest hemlocks in their states.

***Gypsy Moth** *(Lymantria dispar)* – 2010 population surveys turned up very few gypsy moth egg masses. Populations are predicted to remain low, and no measurable defoliation is expected. Male moth counts were high in northern Penobscot county, however no additional life stages were detected during winter egg mass scouting. If you suspect you have found gypsy moth outside of the current quarantine area, please let us know (for a map of the quarantine visit www.maineforestservice.gov/idmquar.htm#gm).

***Hemlock Woolly Adelgid** *(Adelges tsugae)* –The last town added to the list of towns in Maine known to have hemlock woolly adelgid was found in late September of last year. That list grew significantly in 2010, and there are likely additional towns out there with infestations. Several of the newly found areas are well established, and are already showing signs of adelgid-related decline. A full list of towns known to have adelgid is available on our Website: http://www.maineforestservice.gov/HWAOverview.htm#hwa2007.

Now is a good time to check your hemlocks for signs of this insect, their wool will continue to fluff up as new eggs are deposited. If you do find adelgid, be aware that this is an easy time of year to move it, as eggs and miniscule crawlers can both be present. Also, please let us know—your information can help us address management of this significant forest pest. Consider removing your birdfeeders from the beginning of April through the end of August to help reduce the risk of introducing this and other forest pests to your backyard.

New Hampshire and Vermont forest health departments have teamed up to organize a workshop and demonstration covering hemlock woolly adelgid control options. The day long workshop will be held June 8th in Walpole NH. If you are interested in learning more about the workshop, please e-mail Kyle Lombard at klombard@dred.state.nh.us.

***White Pine Weevil** *(Pissodes strobi)* - Control of white pine weevil should be underway in southern parts of the State by the time you receive this publication. The adults lay eggs and the larvae feed on the terminal leader of pine and spruce in early spring. On ornamentals, covering the leader with a nylon stocking secured with a twist tie can block the female from laying eggs. Remove the covering before the leader begins to elongate. This of course is not practical on a large scale and chemical control may be warranted for Christmas tree or timber plantations. See chemical control recommendations listed above.

Diseases

Foliage and Needle Diseases – Early spring is the appropriate time to use fungicides to manage for leaf and needle disease pathogens. Anthracnose diseases of broadleaf trees can result in leaf spots and, in some cases dieback of new shoots. Needle diseases such as spruce needlecast on white and Colorado blue spruce, and *Sphaeropsis* tip blight of red, Austrian, and Scots pine are also perennial problems. Protection of the new, current-season foliage with fungicides can provide effective control. Specifics for several of the most important diseases are listed in the guide above.

The new growth (foliage, needles, and shoots) need to be treated with the appropriate fungicide before infection occurs. This usually requires an application shortly after budbreak, and again ten days to two weeks later, to protect the new growth as tissues expand. Timing of the first application varies from year to year, depending on local seasonal temperatures. This year, we expect budbreak to lag slightly behind that which was seen last year. The below-normal temperatures throughout the late winter and early spring will delay plant development. Weekly observations of buds from late April through May will allow tailoring fungicide application timing to maximize effectiveness.

Weather-Related Damage to Trees - This past winter and early spring has had below-normal temperatures and above-average snowfall, and trees in some areas throughout the state are showing substantial winter injury. Exposed conifers, in particular hemlocks, white pines, and junipers, are the most severely affected. Winter desiccation, or drying, occurs when the foliage is exposed to cold temperatures and high winds, while the ground remains frozen. The inability to replace the moisture lost from the foliage results in winter-burn. However, most damage that is now apparent is not the result of desiccation.

Most damage this year has been caused by the frequently required use of road deicing salts. These materials are often splashed or carried to roadside vegetation as wind-driven mists. The damage is commonly seen affecting trees along the major roadways. Trees growing near roadways on low or wet sites, where roots are shallow and the ground was deeply frozen can be damaged by both desiccation and de-icing salts. While the damage can adversely affect tree growth and vigor, most trees will recover quickly when new foliage begins to develop this spring. A check of bud vitality (branch tips and buds should show as bright green under the bark or bud scales) can give a rapid indication of the severity of damage.

White Pine Blister Rust – The state quarantine prohibiting the culture of European black currants (*Ribes nigrum*) and all its cultivars from throughout the state, and prohibiting European

black currants *and all other Ribes* spp. in the defined quarantine zone (see WPBR quarantine town map) remains in effect.

Early spring is an ideal time to survey white pine stands for the occurrence of *Ribes* spp. plants (currants and gooseberries), which serve as a required host of the white pine blister rust disease. Because the *Ribes* break bud and leaf out earlier than most other vegetation (usually by mid- to late April in southern Maine), the plants can be more easily located in early spring, before the other ground vegetation begins to form leaves. Removal of the plants by uprooting or herbicides from within and up to 1000 feet of pine stands will reduce incidence of white pine blister rust. Younger pine trees (seedlings, saplings, and small pole-sized stands) are most susceptible to mortality from white pine blister rust, and will benefit the most from appropriate *Ribes* eradication management methods.

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Maine Forest Service
Forest Health and Monitoring